REMARKS/ARGUMENTS

The above-identified patent application has been reviewed in light of the Examiner's non-final Office Action dated June 3, 2009. Claims 1, 4, 8, 9, 11, 12, 14, 19, and have been amended, without intending to abandon or to dedicate to the public any patentable subject matter. Claims 5, 10, 15, and 16 have been canceled herein and Claims 2, 7, and 21-25 were previously canceled. Claims 26-33 are new. Accordingly, Claims 1, 3, 4, 6, 8, 9, 11-14, 17-20, and 26-33 are now pending. As set forth herein, reconsideration and withdrawal of the rejections of the claims are respectfully requested.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph:

The Examiner has rejected Claims 1, 3-6, and 8-20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

In particular, the Examiner considers the wording of Claim 1 to be confusing. Claim 1 has been amended to read:

> *A sensor apparatus adapted to be used with milk extraction machinery, the milk extraction machinery including a plurality of extraction elements for connection to a dairy animal which when activated are adapted to deliver extracted milk ~~from two or more extraction elements~~ into a single collection line, the sensor apparatus including:*
>
> *a sensor forming a serial extension of the single collection line, wherein the sensor is adapted to detect a particular property of the milk extracted, and*
>
> *a controller configured to control the activation of the extraction elements during a pre-determined period of milking the animal such that the sensor is exposed to extracted milk supplied from only one extraction element or one pair of extraction elements at any one time,*
>
> *wherein the sensor apparatus is configured ~~to identify the detected property of the extracted milk~~ such that the property of the extracted milk detected by the sensor is matched with the extraction element or elements from which the milk was delivered.*

The Examiner has noted that *"the limitation of the sensor identifying the extraction element from which the milk is extracted" is* not found in the original disclosure. Applicants respectfully draw the Examiner's attention to the present specification which makes continual

reference to the advantages in sensing properties of milk extracted from individual quarters. *See*, for example, Page 10, line 21 through Page 11, line 3 of the present specification, which reads:

> *"This configuration of the controller and its use in conjunction with the present invention ensures that the single sensor within the long milk tube can provide an analysis of milk in transit from a single udder half or quarter only. This allows ailments affecting the particular udder half or quarter in question to be diagnosed in isolation, or for specific contaminants sourced from a single udder half or quarter to be identified without dilution of the milk involved from milk supplied via other udder sections."*

Further, the specification discusses (at Page 14, ll. 17-24) that the sensor apparatus provides:

> *"...an indication of problems with specific quarters relatively easily, preferably due to the sampling of milk in isolation from such quarters.*
>
> *The present invention may also be adapted to sample or analyse the foremilk produced from an udder quarter, again to improve the accuracy of results or measurements obtained."*

A person having ordinary skill in the art would appreciate that the sensor apparatus is clearly intended to match the property of the milk detected by the sensor with the extraction element and hence udder quarter (or half) from which the milk was extracted. The sensor apparatus is thus able to provide the desired diagnosis of ailments affecting a particular udder half or quarter as a result.

The Examiner has also objected that the previous wording of Claim 19 made it seem as if sensor output signals are compared to extraction elements in order to detect milk abnormality. In the interest of clarity, Claim 19 has been amended to read:

> *The sensor apparatus as claimed in claim 17 wherein milk abnormality is detected through a comparison between the sensor output signal[[s]] indicating the detected property of the milk extracted from an udder quarter or half of the diary animal by an extraction element or elements, and the sensor output signal indicating the detected property of the milk extracted from other quarters or half of the same udder by ~~and~~ an alternative extraction element or elements.*

Accordingly, as amended herein, Claims 1 and 19 clearly and precisely define the subject matter of and scope of the invention. Therefore, Applicants respectfully submit that Claims 1 and 19, and Claims 3, 4, 6, 8, 9, 11-14, 17, 18, and 20 which depend therefrom, are sufficiently definite to meet the requirements of 35 U.S.C. § 112, second paragraph and request withdrawal of the

rejection.

Claim Rejections Under 35 U.S.C. § 102:

In order for a rejection under 35 U.S.C. §102 to be proper, each and every element as set forth in a claim must be found, either expressly or inherently described, in a single prior art reference. (MPEP §2131). However, all of the claimed elements cannot be found in the cited reference. Accordingly, reconsideration and withdrawal of the rejections as anticipated in view of the cited reference are respectfully requested.

Nordegren

The Examiner has rejected Claims 1, 3-6, 9-12, 15 and 16 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,011,838 to Nordegren *et al.* ("Nordegren"). Nordegren relates to a milking machine system for the variation of working vacuum or massage vacuum, including a common flow rate sensing device 14.

Nordegren does not disclose, teach or suggest a sensor apparatus *"wherein the sensor apparatus is configured such that the property of the extracted milk detected by the sensor is matched with the extraction element or elements from which the milk was delivered"* as claimed in amended Claim 1.

The specification of the present invention makes continual reference to the advantages in doing so, with paragraphs [0058] and [0059] disclosing that the sensor apparatus provides:

> *"...an indication of problems with specific quarters relatively easily, preferably due to the sampling of milk in isolation from such quarters.*
>
> *The present invention may also be adapted to sample or analyse the foremilk produced from an udder quarter, again to improve the accuracy of results or measurements obtained."*

There is no discussion within Nordegren to teach that the flow rate sensor 14 matches the flow rate of milk passing through the sensor with the teat cup (and hence quarter) from which the milk was extracted.

There is continual reference throughout Nordegren to the measurement of the overall flow rate of milk in the units of kilograms per minute. This flow rate is used to determine the level of milking vacuum to be implemented in accordance with a pre-programmed series of

phases. One skilled in the art would understand that the sensor of Nordegren measures the flow rate of milk extracted by all of the teat cups, with no determination of the originating teat cup(s) by which milk flowing through the sensor was extracted.

One skilled in the art would recognize that the teaching of Nordegren directs the reader to an apparatus for implementing a milking scheme involving the application of various levels of milking vacuum and pulsation characteristics. It would not be obvious to match the flow rate of the milk flowing through the sensor with the extraction element from which it was extracted, as there is no incentive to do so. Similarly, there is no discussion as to how the apparatus of Nordegren would achieve this.

It is not an intent of Nordegren *"to control the activation of the extraction elements during a pre-determined period of milking the animal such that the sensor is exposed to extracted milk supplied from only one extraction element or one pair of extraction elements at any one time"* as claimed in at least Claim 1 of the present application. This is merely a by-product of sequential operation of the teat cups which is described in column 4 line 65, to column 5 line 2 of Nordegren as being *"beneficial to the milking operation in several respects, such as resulting in even milk flow in the line, minimizing the risk of carrying over infection, suppressing air mixing into the milk, lowering free fatty acids, and controlling hydrolytic rancidity."*

Further, Nordegren maintains a priority date of March 25, 1976. The benefits in detecting a particular property of milk extracted from individual udder quarters or halves has been known for decades. Twenty seven years between this date and the priority date of the present application is a significant amount of time in the field of dairy sensing, and the prevalence of the milking claw arrangement during this time has meant that the problems addressed by the present invention are not new – with significant incentive to address these issues.

The Examiner has stated that this argument is not impressive absent a showing that the art tried and failed to solve the same problem non-withstanding its presumed knowledge of the references. However, the Examiner's own previous citation of NL1020805 (Van den Berg) shows that the problem has been identified by the industry. NL1020805 clearly intends to provide a single sensor in a common collection line in order to sense properties of milk extracted from individual quarters. As discussed in the response to Office Action filed March 13, 2009,

Van den Berg has numerous issues, such as introducing additional mechanical points of failure (valves within the milking lines), and providing points at which milk residue may accumulate – raising hygiene issues, or disrupting the flow of the milk as it passes by the valve.

The present invention addresses a long felt need in the market, and we maintain that it follows that the state of the art supports the novelty and inventiveness of the invention as claimed, especially with regard to Nordegren.

For at least the reasons discussed above, Applicants submit that the invention as claimed is novel and inventive over Nordegren.

Van den Berg

In addition, the Examiner has rejected Claims 1, 8, and 17-20 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,823,817 to Van den Berg *et al.* ("Van den Berg"). Van den Berg describes a system for monitoring the milking of a cow in order to determine the optimal point for stopping milking of the cow.

Van den Berg does not disclose a sensor apparatus including *"a sensor forming a serial extension of the single collection line, wherein the sensor is adapted to detect a particular property of the milk extracted"*. Column 5, lines 15-20 of Van den Berg clearly states that:

> *"The milk yielded per udder quarter by means of teat cup 2 may be supplied via its own separate milk line 4 to a corresponding milk quantity meter or milk glass 3. A discharge line 5 of milk glass 3 is coupled to a line 7 extending to a bulk milk cooling tank 6."*

It is clear that the sensors 10, 11 and 12 do not form a serial extension of the single collection line (line 7 of Van den Berg). Rather, the sensors are present in all of the individual milking lines 4 and 5 leading from the teatcup to bulk collection line 7.

By providing individual sensors in each milking line, Van den Berg describes a system which teaches away from the present invention. Page 3, ll. 1-7 of the present specification states:

> *"...the provision of multiple sensors would be a relatively expensive mechanism due to the costs of the multiple components used. The provision of multiple sensors or transducers will also require multiple calibration procedures or runs to be implemented frequently to ensure accurate results may be obtained from each sensor".*

By providing a sensor forming a serial extension of the single collection line as claimed in amended Claims 1 and 19 of the present application, only a single sensor is required to service

multiple extraction elements and the costs associated with the purchase / maintenance / calibration of multiple sensors is not incurred.

There is nothing to suggest that the system illustrated by Figure 2 of Van den Berg provides a "*sensor forming a serial extension of the single collection line*" as claimed in Claims 1 and 19.

Van den Berg describes comparing the conductivity of milk from individual teats to detect infection, but there is nothing in the description to suggest the conductivity meter (reference numeral 12) is shared by the individual teatcups in a common milking line. Figure 2 of Van den Berg has been drawn such that it appears to show the milk lines joining after exiting the temperature meter (reference numeral 11) for convenience sake, rather than to indicate a shared conductivity meter 12.

This is supported by an earlier Van den Berg European patent application, EP1131996. Figure 2 of EP1131996 shows a similar apparatus, where individual milk lines 19 appear to join into a single collection line, passing through milk flow sensor 26.

However, column 9, lines 33 – 42 of EP1131996 reads:

> "*Each of the milk lines 19 connected to the teat cups 18 ends individually into a milk jar 20... while furthermore a mastitis sensor 25 and milk flow sensor 26 are incorporated in each of the milk lines.*"

This reinforces the assertion that Figure 2 of Van den Berg (US 6,823,817) does not disclose "*a sensor forming a serial extension of the single collection line, wherein the sensor is adapted to detect a particular property of the milk extracted*" as claimed by the present application.

Van den Berg is an example of a system contrary to the objectives of the invention as presently claimed, and we submit that the amended claim set is novel and inventive over the citation for at least the reasons discussed.

Applicants believe amended Claims 1 and 19 are novel and inventive over the cited art for at least the reasons discussed above. It follows that the dependent claims rejected under this section are allowable for the same reasons.

Claim Rejections Under 35 U.S.C. § 103(a):

The Examiner has rejected Claim 13 under 35 U.S.C. § 103(a) as being obvious over U.S. Nordegren in view of U.S. Patent No. 4,572,104 to Rubino ("Rubino"). The Examiner has also rejected Claim 14 under 35 U.S.C. § 103(a) as being obvious over Nordegren in view of U.S. Pat No. 4,538,634 (not U.S. Pat. No. 6,170,434 as indicated by the Examiner) to Seabourne ("Seabourne"). In order to establish a *prima facie* case of obviousness under §103, there must be some suggestion or motivation to modify the reference or to combine the reference teachings, there must be a reasonable expectation of success, and the prior art reference or references must teach or suggest all of the claim limitations. (MPEP §2143). Obviousness rejections cannot be based on mere conclusory statements; rather, there must be an articulated reasoning and a rational underpinning to support and obvious rejection. *KSR Int'l Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385, 1396 (2007). As such, all of the claim elements cannot be found in the cited references, whether those references are considered alone or in combination. As previously stated, Applicants believe amended Claim 1 is novel and inventive over the cited art for at least the reasons discussed above. It follows that the dependent claims rejected under this section are allowable for the same reasons. Accordingly, reconsideration and withdrawal of the rejections of the claims as obvious in view of the cited references are respectfully requested.

New Claims:

New claims 26-33 have been added to claim more specific aspects of the invention. In particular, new independent Claim 30 is a combination of amended independent Claim 1 and amended dependent Claim 19. New Claim 30 reads:

> *A sensor apparatus adapted to be used with milk extraction machinery, the milk extraction machinery including a plurality of extraction elements for connection to a dairy animal which when activated are adapted to deliver extracted milk into a single collection line, the sensor apparatus including:*
>
> *a sensor forming a serial extension of the single collection line, wherein the sensor is adapted to detect a particular property of the milk extracted, and*
>
> *a controller configured to control the activation of the extraction elements during a pre-determined period of milking the animal such that the sensor is exposed to extracted milk supplied from only one extraction element or one pair of extraction elements at any one time,*

> *wherein the sensor apparatus is configured to detect abnormality of the extracted milk through a comparison between a sensor output signal indicating the detected property of the milk extracted from an udder quarter or half of the dairy animal by an extraction element or elements, and a sensor output signal indicating the detected property of the milk extracted from other quarters or half of the same udder by an alternative extraction element or elements.*

At present, the Examiner has cited Van den Berg against Claim 19, however Applicants believe the arguments outlined above with regard to overcoming the Claim Rejections under 35 USC § 102 address this objection and that the invention as claimed is novel and inventive in light of the cited art.

Reference to partial activation in cancelled Claims 15 and 16 (presently new Claim 29) has been amended to a cyclic change in air pressure "below the threshold level", the threshold level having been introduced in new Claim 27.

This amendment is supported by Page 18, line 22 through Page 19, line 2 of the present specification, which reads:

> *"As can be seen from FIG. 4, an applied vacuum below the threshold level indicated at F or S will supply a physical stimulation effect to the teat but will not necessarily allow milk extraction. Conversely a vacuum applied above this region or level will allow milk to flow until the closing liner applies a sufficient closing force around the teat-end."*

Therefore, Applicants believe that new Claims 26-33 are supported by the specification and are in condition for allowance and such disposition is respectfully requested.

Conclusion:

Based on the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone

conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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